

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims:

1. (Currently Amended) A method comprising:

employing a processor executing computer readable instructions to perform the following acts;

identifying a change in a return link signal quality at a gateway for a return link from a terminal communicatively coupled to the gateway through a satellite, ~~[[said]]~~ the return link being shared by a plurality of terminals having an interference relationship, wherein identifying the change in the return link signal quality comprises:

identifying a change ~~that has occurred~~ in a signal-to-noise ratio for the return link from the terminal~~[[,]]~~; and

interpreting the change in the signal-to-noise ratio as indicating the change in the return link signal quality;

receiving a feedback signal at the terminal, from the gateway, ~~[[said]]~~ the feedback signal indicating at least one of the ~~return link~~ signal-to-noise ratio for the return link as measured at the gateway ~~[[and]]~~ or the change in the ~~return link~~ signal-to-noise ratio for the return link as measured at the gateway; and

adjusting a data rate, at the terminal, based ~~at least~~ in part on a determination made at the terminal to adjust the data rate to correct for degradation of the return link signal quality, for a message sent from the terminal through the return link based on the change in the return link signal quality without changing link power levels and the interference relationship among the plurality of terminals, wherein identifying the change in the return link signal and adjusting the data rate are performed concurrently by a transmitter of the message and a receiver of the message.

2-3. (Cancelled).

4. (Currently Amended) The method of claim [[2]]1, wherein the ~~return-link~~ signal-to-noise ratio for the return link includes [[both]] thermal noise and interference.

5. (Cancelled).

6. (Currently Amended) The method of claim [[2]]1, wherein identifying the change in the ~~return-link~~ signal-to-noise ratio for the return link comprises:

measuring a forward link signal-to-noise ratio at the terminal for a forward link from the gateway through the satellite to the terminal; and

approximating the ~~return-link~~ signal-to-noise ratio for the return link at the gateway based on the forward links signal-to-noise ratio.

7. (Currently Amended) The method of claim [[2]]1, wherein adjusting the data rate comprises:

reducing the data rate if the ~~return-link~~ signal-to-noise ratio for the return link ~~has fallen below~~ is less than a first threshold; and

increasing the data rate if the ~~return-link~~ signal-to-noise ratio for the return link ~~has risen above~~ is greater than a second threshold.

8. (Currently Amended) The method of claim [[2]]1, wherein adjusting the data rate comprises:

transmitting a bit of the message for a ~~longer~~ first duration of time to reduce the data rate; and

transmitting a bit of the message for a ~~shorter~~ second duration of time to increase the data rate, the first duration of time being greater than the second duration of time.

9. (Currently Amended) The method of claim [[2]]1, wherein adjusting the data rate comprises adjusting the data rate to one of a set of discrete ~~data-rate-to-carrier-bandwidth~~ data rate-to-carrier bandwidth ratios.

10. (Cancelled).

11. (Currently Amended) The method of claim 1_a wherein adjusting the data rate comprises:

applying a ~~higher~~ first coding rate to bits of the message to increase the data rate; and
applying a ~~lower~~ second coding rate to bits of the message to reduce the data rate, the first coding rate being greater than the second coding rate.

12. (Currently Amended) The method of claim 11_a wherein adjusting the data rate further comprises:

transmitting a bit of the message for a ~~longer~~ first duration of time to further reduce the data rate; and

transmitting a bit of the message for a ~~shorter~~ second duration of time to further increase the data rate, the first duration of time being greater than the second duration of time.

13. (Cancelled).

14. (Currently Amended) The method of claim 1_a wherein ~~[[said]]~~ the return link comprises a code division multiple access (CDMA) channel.

15. (Currently Amended) The method of claim 1_a wherein the return link comprises a current messaging time slot among a plurality of time slots in each of a series of time frames, the method further comprising:

suspending the message if ~~[[a]]~~ the current messaging time slot in a current time frame expires before the message is complete; and

resuming the message in a ~~subsequent~~ messaging time slot subsequent to the current messaging time slot in a ~~subsequent~~ time frame subsequent to the current time frame.

16. (Currently Amended) The method of claim 15_a wherein resuming the message comprises resuming the message at a beginning of the ~~subsequent~~ messaging time slot

subsequent to the current messaging time slot in the ~~subsequent~~ time frame subsequent to the current time frame.

17. (Currently Amended) The method of claim 1₁ wherein the return link comprises a messaging time slot among a plurality of time slots in each of a series of time frames, the method further comprising initiating the message at a random ~~point~~ time within a ~~particular~~ the messaging time slot.

18. (Currently Amended) The method of claim 1₁ wherein the return link comprises a messaging time slot among a plurality of time slots in each of a series of time frames, the method further comprising:

determining that a duration of the message ~~will span more~~ is greater than a ~~particular~~ selected number of durations of the messaging time slot; and

transmitting the message for a transmission duration greater than a duration of the messaging time slot, wherein the message is transmitted until its transmission is complete, beyond an end of a messaging time slot in a particular frame until the message is complete.

19. (Currently Amended) The method of claim 18₁ wherein determining that the duration of the message ~~will span more~~ is greater than ~~a particular~~ the selected number of durations of the messaging time slot comprises:

comparing ~~[[a]]~~ the duration of the message at ~~[[the]]~~ a current data rate to a length threshold, ~~[[said]]~~ the length threshold ~~comprising being indicative of the particular~~ selected number of durations of the messaging time slot.

20. (Currently Amended) The method of claim 18₁ wherein determining that the duration of the message ~~will span more~~ is greater than ~~a particular~~ the selected number of durations of the messaging time slot comprises:

comparing a ~~data rate-to-bandwidth~~ data rate-to-bandwidth ratio for the message to a threshold ~~data rate-to-bandwidth~~ data rate-to-bandwidth ratio.

21. (Currently amended) An Apparatus apparatus comprising:

means for identifying a change in a return link signal quality at a gateway for a return link between a terminal and a gateway, ~~[[said]] the~~ return link being shared by a plurality of terminals having an interference relationship, wherein the means for identifying the change in the return link signal quality comprises:

a means for identifying a change ~~that has occurred~~ in a signal-to-noise ratio for the return link from the terminal, the means comprising:

means for measuring a forward link signal-to-noise ratio at the terminal for a forward link from the gateway through the satellite to the terminal; and

means for approximating the ~~return-link~~ signal-to-noise ratio for the return link at the gateway based on the forward link signal-to-noise ratio; and

a means for interpreting the change in the signal-to-noise ratio ~~for the return link~~

as indicating the change in the return link signal quality;

means for receiving a feedback signal at the terminal, from the gateway, ~~[[said]] the~~ feedback signal indicating at least one of the ~~return-link~~ signal-to-noise ratio for the return link as measured at the gateway ~~[[and]] or~~ the change in the return link signal-to-noise ratio as measured at the gateway; and

means for adjusting a data rate, at the terminal, based ~~at least~~ in part on a determination made at the terminal to adjust the data rate to correct for degradation of the return link signal quality, for a message sent from the terminal through the return link based on the change in the return link signal quality without changing link power levels and the interference relationship among the plurality of terminals.

22-24. (Cancelled).

25. (Currently Amended) The apparatus of claim 21, wherein the means for adjusting the data rate comprises:

means for reducing the data rate if ~~a return-link~~ the signal-to-noise ratio for the return link ~~has fallen below~~ is less than a first threshold; and

means for increasing the data rate if the ~~return-link~~ signal-to-noise ratio for the return link ~~has risen above~~ is greater than a second threshold.

26. (Currently Amended) The apparatus of claim 21, wherein the means for adjusting the data rate comprises:

means for transmitting a bit of the message for a ~~longer~~ first duration of time to reduce the data rate; and

means for transmitting a bit of the message for a ~~shorter~~ second duration of time to increase the data rate, the first duration of time being greater than the second duration of time.

27. (Currently Amended) The apparatus of claim 21, wherein the means for adjusting the data rate comprises:

means for applying a ~~higher~~ first coding rate to bits of the message to increase the data rate; and

means for applying a ~~lower~~ second coding rate to bits of the message to reduce the data rate, the first coding rate being greater than the second coding rate.

28. (Currently Amended) The apparatus of claim 27, wherein the means for adjusting the data rate further comprises:

means for transmitting a bit of the message for a ~~longer~~ first duration of time to further reduce the data rate; and

means for transmitting a bit of the message for a ~~shorter~~ second duration of time to further increase the data rate, the first duration of time being greater than the second duration of time.

29. (Currently Amended) The apparatus of claim 21, wherein the means for adjusting the data rate comprises means for adjusting the data rate to one of a set of discrete ~~data-rate-to-carrier-bandwidth~~ data rate-to-carrier bandwidth ratios.

30-31. (Cancelled).

32. (Currently Amended) The apparatus of claim 21, wherein the return link comprises a current messaging time slot among a plurality of time slots in each of a series of time frames, the apparatus further comprising:

means for suspending the message if ~~[[a]]~~ the current messaging time slot in a current time frame expires before the message is complete; and

means for resuming the message in a ~~subsequent~~-messaging time slot subsequent to the current messaging time slot in a ~~subsequent~~ time frame subsequent to the current time frame.

33. (Currently Amended) The apparatus of claim 32, wherein the means for resuming the message comprises means for resuming the message at a beginning of the ~~subsequent~~ messaging time slot subsequent to the current messaging time slot in the ~~subsequent~~ time frame subsequent to the current time frame.

34. (Currently Amended) The apparatus of claim 21, wherein the return link comprises a messaging time slot among a plurality of time slots in each of a series of time frames, the apparatus further comprising means for initiating the message at a random ~~point~~ time within a ~~particular~~ the messaging time slot.

35. (Currently Amended) The apparatus of claim 21, wherein the return link comprises a messaging time slot among a plurality of time slots in each of a series of time frames, the apparatus further comprising:

means for determining that a duration of the message ~~will span more~~ is greater than a ~~particular~~ selected number of durations of the messaging time slot; and

means for transmitting the message for a transmission duration greater than a duration of the messaging time slot, wherein the message is transmitted until its transmission is complete, beyond an end of a messaging time slot in a particular frame until the message is complete.

36. (Currently Amended) The apparatus of claim 35, wherein the means for determining that the duration of the message ~~will span more~~ is greater than a ~~particular~~ selected number of durations of the messaging time slot comprises:

means for comparing ~~[[a]]~~ the duration of the message at ~~[[the]]~~ a current data rate to a length threshold, ~~[[said]]~~ the length threshold ~~comprising~~ being indicative of the particular selected number of durations of the messaging time slot.

37. (Currently Amended) The apparatus of claim 35, wherein the means for determining that the duration of the message will span more is greater than a particular selected number of durations of the messaging time slot comprises:

means for comparing a current ~~data rate-to-bandwidth~~ data rate-to-bandwidth ratio for the message to a threshold ~~data rate-to-bandwidth~~ data rate-to-bandwidth ratio.

38. (Currently Amended) ~~An Apparatus~~ apparatus comprising:

a comparator configured to identify a change in a return link signal quality at a gateway for a return link from a terminal communicatively coupled to the gateway through a satellite, ~~[[said]]~~ the return link being shared by a plurality of terminals, ~~said plurality of terminals~~ having an interference relationship, wherein identifying the change in the return link signal quality comprises:

identifying a change ~~that has occurred~~ in a signal-to-noise ratio for the return link from the terminal~~[[,]]~~; and

interpreting the change in the signal-to-noise ratio as indicating the change in the return link signal quality; and

a data rate generator configured to adjust a data rate, at the terminal, based ~~at least~~ in part on a determination made at the terminal to adjust the data rate to correct for degradation of the return link signal quality, for a message sent from the terminal through the return link based on the change in the return link signal quality without changing link power levels and the interference relationship among the plurality of terminals~~[[,]]~~, wherein the data rate generator is configured to ~~receives~~ receive a feedback signal, at a terminal feedback input, from the gateway, ~~[[said]]~~ the feedback signal indicating at least one of the ~~return link~~ signal-to-noise ratio for the return link as measured at the gateway ~~[[and]]~~ or the change in the ~~return link~~ signal-to-noise ratio for the return link as measured at the gateway, wherein identifying the change in the return link signal and adjusting the data rate are performed concurrently by a transmitter of the message and a receiver of the message.

39-40. (Cancelled).

41. (Currently Amended) The apparatus of claim 38, wherein the comparator comprises:

a signal-to-noise detector configured to measure a forward link signal-to-noise ratio at the terminal for a forward link from the gateway through the satellite to the terminal; and

a logic block configured to approximate the ~~return-link~~ signal-to-noise ratio for the return link at the gateway based on the forward link signal-to-noise ratio.

42. (Currently Amended) The apparatus of claim 38, wherein the data rate generator is configured to reduce the data rate if the ~~return-link~~ signal-to-noise ratio for the return link ~~has fallen below~~ is less than a first threshold, and increase the data rate if the ~~return-link~~ signal-to-noise ratio for the return link ~~has risen above~~ is greater than a second threshold.

43. (Currently Amended) The apparatus of claim 38, wherein the data rate generator is configured to transmit a bit of the message for a ~~longer~~ first duration of time to reduce the data rate, and transmit a bit of the message for a ~~shorter~~ second duration of time to increase the data rate, the first duration of time being greater than the second duration of time.

44. (Currently Amended) The apparatus of claim 38, wherein the data rate generator is configured to encode a bit of the message at a ~~higher~~ first code rate to reduce the data rate, and encode a bit of the message at a ~~lower~~ second code rate to increase the data rate, the first code rate being greater than the second code rate.

45. (Currently Amended) The apparatus of claim 38, wherein the return link comprises a current messaging time slot among a plurality of time slots in each of a series of time frames, and wherein the data rate generator is configured to suspend the message if [[a]] the current messaging time slot in a current time frame expires before completion of the message, and resume the message in a ~~subsequent~~ messaging time slot subsequent to the current messaging time slot in a ~~subsequent~~ time frame subsequent to the current time frame.

46. (Currently Amended) The apparatus of claim 38, wherein the return link comprises a messaging time slot among a plurality of time slots in each of a series of time frames, and wherein the data rate generator is configured to determine that a duration of the message ~~will span more~~ is greater than a ~~particular~~ selected number of durations of the messaging time slot,

and transmit the message for a transmission duration greater than a duration of the messaging time slot, wherein the message is transmitted until its transmission is complete, beyond an end of a messaging time slot in a particular frame until completion of the transmission duration of message.

47. (Currently Amended) The apparatus of claim 38, wherein the data rate generator comprises:

a threshold comparator configured to compare a duration of the message at [[the]] a current data rate to a length threshold, [[said]] the length threshold comprising being indicative of the particular selected number of durations of the messaging time slot.

48. (Currently Amended) The apparatus of claim 38, wherein the data rate generator comprises:

a threshold comparator configured to compare a current data rate-to-bandwidth data rate-to-bandwidth ratio for the message to a threshold data rate-to-bandwidth data rate-to-bandwidth ratio.

49. (Currently Amended) A machine readable medium having stored thereon machine executable instructions adapted for performing a method comprising:

identifying a change in a return link signal quality at a gateway for a return link from a terminal communicatively coupled to the gateway through a satellite, [[said]] the return link being shared by a plurality of terminals having an interference relationship, wherein identifying the change in the return link signal quality comprises:

identifying a change ~~that has occurred~~ in a signal-to-noise ratio for the return link from the terminal[[.]]; and

interpreting the change in the signal-to-noise ratio as indicating the change in the return link signal quality;

receiving a feedback signal at the terminal, from the gateway, [[said]] the feedback signal indicating at least one of the ~~return link~~ signal-to-noise ratio for the return link as measured at the gateway [[and]] or the change in the ~~return link~~ signal-to-noise ratio for the return link as measured at the gateway; and

adjusting a data rate, at the terminal, based ~~at least~~ in part on a determination made at the terminal to adjust the data rate to correct for degradation of the return link signal quality, for a message sent from the terminal through the return link based on the change in the return link signal quality without changing link power levels and the interference relationship among the plurality of terminals, wherein the return link comprises a messaging time slot among a plurality of time slots in each of a series of time frames, and the sent message is initiated at a random time within the messaging time slot.

50-51. (Cancelled).

52. (Currently Amended) The machine readable medium of claim 49, wherein the executable instructions are further adapted for performing a method comprise comprising:

measuring a forward link signal-to-noise ratio at the terminal for a forward link from the gateway through the satellite to the terminal; and

approximating the ~~return-link~~ signal-to-noise ratio for the return link at the gateway based on the forward link signal-to-noise ratio.

53. (Currently Amended) The machine readable medium of claim 49, wherein the executable instructions are further adapted for performing a method comprise comprising:

reducing the data rate if the ~~return-link~~ signal-to-noise ratio for the return link ~~has fallen below~~ is less than a first threshold; and

increasing the data rate if the ~~return-link~~ signal-to-noise ratio for the return link ~~has risen above~~ is greater than a second threshold.

54. (Cancelled).

55. (Currently Amended) The machine readable medium of claim 49, wherein the executable instructions are further adapted for performing a method comprise comprising:

transmitting a bit of the message for a ~~longer~~ first duration of time to reduce the data rate; and

transmitting a bit of the message for a ~~shorter second~~ duration of time to increase the data rate, the first duration of time being greater than the second duration of time.

56. (Currently Amended) The machine readable medium of claim 49, wherein the executable instructions are further adapted for performing a method comprise comprising:

adjusting the data rate to one of a set of discrete ~~data rate to carrier bandwidth~~ data rate-to-carrier bandwidth ratios.

57. (Currently Amended) The machine readable medium of claim 49, wherein the return link comprises a current messaging time slot among a plurality of time slots in each of a series of time frames, and wherein the executable instructions are further adapted for performing a method comprise comprising:

suspending the message if [[a]] the current messaging time slot in a current time frame in the series of time frames expires before the message is complete; and

resuming the message in a ~~subsequent~~ messaging time slot subsequent to the current messaging time slot in a ~~subsequent~~ time frame subsequent to the current time frame.

58. (Currently Amended) The machine readable medium of claim 57, wherein the executable instructions are further adapted for performing a method comprise comprising:

resuming the message at a beginning of the ~~subsequent~~ messaging time slot subsequent to the current messaging time slot in the ~~subsequent~~ time frame subsequent to the current time frame.

59. (Currently Amended) The machine readable medium of claim 49, wherein the executable instructions are further adapted for performing a method comprise comprising:

determining that a duration of the message ~~will span more~~ is greater than a particular selected number of durations of a messaging time slot in the return link among a plurality of time slots in each of a series of time frames forming the return link; and

transmitting the message for a transmission duration greater than a duration of the messaging time slot, wherein the message is transmitted until its transmission is complete,
beyond an end of a messaging time slot in a particular frame until the message is complete.